

PHYSICS & SOCIETY

IN THE OCTOBER 2002 ISSUE

Editor's Comments

Articles

Germany: Disarmament Research in Physics, *Jürgen Altmann*

The Causes of the Chernobyl Event, *Jacques Frot*

Chernobyl: The Effects on Public Health? *Andre Aurengo*

Commentary

Nuclear Earth-Penetrators: a Dangerous Fantasy, *A. DeVolpi*

Heisenberg, Bohr and the Atom Bomb, *Wolfgang Liebert*

Copenhagen in Europe: Why not the Same Debate as in the US ? *Jean-Jacques Salomon*

The Role of German Physicists in WWII Science, *Harry Lipkin*

Creating a New Past: Heisenberg and Radioactive Decay, *Alvin M. Saperstein and Betsy Pugel*

Letters

A New Challenge from the Creationists, *Adrian L. Melott*

A Reaction to a Reading of Jeff Schmidt's 'Disciplined Minds', *Jeffrey Marke*

Women in Physics and Scientific Literacy, *Art Hobson*

Reviews

Energy: Science, Policy and the Pursuit of Sustainability, Edited by Robert Bent, Lloyd Orr and Randall Baker, reviewed by *Matthew Sharp*

Science and Security in the 21st Century, by the Commission on Science and Security, reviewed by *Lincoln Wolfenstein*

Silent Spill, the Organization of an Industrial Crisis by Thomas D. Beamish, reviewed by *Daphne Burleson*

Reports of the National Center for Science Education, reviewed by *Lawrence S. Lerner*

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[APS HOME](#)

[FPS HOME](#)

[Previous
Newsletters](#)

[CONTENTS
this issue](#)

[Contact the Editors](#)

Volume 31, Number 4 October 2002

[PDF](#) file of entire issue (51 pp)

- [Editor's Comments PDF](#)
- **Articles**
 1. [Germany: Disarmament Research in Physics](#), Jürgen Altmann [PDF](#)
 2. [The Causes of the Chernobyl Event](#), Jacques Frot [PDF](#)
 3. [Chernobyl: The Effects on Public Health?](#) Andre Aurengo [PDF](#)
- [Commentaries PDF](#)
 1. Nuclear Earth-Penetrators: a Dangerous Fantasy, A. DeVolpi
 2. Heisenberg, Bohr and the Atom Bomb, Wolfgang Liebert
 3. Copenhagen in Europe: Why not the Same Debate as in the US ? Jean-Jacques Salomon
 4. The Role of German Physicists in WWII Science, Harry Lipkin
 5. Creating a New Past: Heisenberg and Radioactive Decay, Alvin M. Saperstein and Betsy Pugel
- [Letters PDF](#)
 1. A New Challenge from the Creationists, Adrian L. Melott
 2. A Reaction to a Reading of Jeff Schmidt's 'Disciplined Minds', Jeffrey Marke
 3. Women in Physics and Scientific Literacy, Art Hobson
- [Reviews PDF](#)
 1. Energy: Science, Policy and the Pursuit of Sustainability, Edited by Robert Bent, Lloyd Orr and Randall Baker, reviewed by Matthew Sharp
 2. Science and Security in the 21st Century, by the Commission on Science and Security, reviewed by Lincoln Wolfenstein
 3. Silent Spill, the Organization of an Industrial Crisis by Thomas D. Beamish, reviewed by Daphne Burleson
 4. Reports of the National Center for Science Education, reviewed by Lawrence S. Lerner

Physics and Society is the quarterly of the Forum on Physics and Society, a division of the American Physical Society. It presents letters, commentary, book reviews and reviewed articles on the relations of physics and the physics community to government and society. It also carries news of the Forum and provides a medium for Forum members to exchange ideas. Opinions expressed are those of the authors alone and do not necessarily reflect the views of the APS or of the Forum. Contributed articles (up to 2500 words, technicalities are encouraged), letters (500 words), commentary (1000 words), reviews (1000 words) and brief news articles are welcome. Send them to the relevant editor by e-mail (preferred) or regular mail.

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EDITOR'S COMMENTS

The issue which precipitated the intense interest of many physicists (and their organizations) in the problems at the interface between science and society during the last half of the twentieth century was the initial construction and use of nuclear weapons. It still holds our attention today – in the form of the planning for contemporary use of nuclear weapons and as the recurrent attempts to understand and assess responsibility for its initial developments. Tightly linked to the problem of nuclear weapons is the issue of nuclear reactors as mobile and stationary power sources.

In this issue of *Physics and Society*, J. Altman illustrates the contemporary interest of German physicists in the problem of nuclear weapons and international security. With the comments of A. DeVolpe, we return to the question: should we be planning to use nuclear weapons in the course of “ordinary events”? And L. Wolfenstein reminds us that there are still unresolved questions in the U.S. system for procuring and maintaining nuclear weapons.

The issue of responsibility for creating and maintaining nuclear weapons, though contemporary, seems to be most popularly examined via the lens of the past. The play *Copenhagen* and the reactions of its audiences continue to fascinate me and many of my colleagues. (Even though I, and perhaps many of these colleagues, first started pondering the issues of responsibility raised by the play many years ago with the appearance of Sam Goudsmit's *Alsos* and Robert Ruark's *Brighter than a Thousand Suns*.) An immediate question is why the very different reactions to the play by American and European audiences? W. Liebert gives some German insight into this question while J. Salomon looks at it from a French perspective. H. Lipkin asks us to look beyond the WWII competition between Allied and German physicists over the creation of nuclear weapons to the apparent lack of competition with respect to non-nuclear weapons. And I, together with my old colleague B. Pugel, again puzzle over the apparent ability of W. Heisenberg to forget his past weapons activities. Observing one's past self is apparently still an observation, subject to the distortions of the present observing “instrument”.

The contemporary issue of nuclear power – vital in a day of increasing pollution due to fossil fuels and threatened access to, and continued availability of, these fuels – requires continued examination of those notorious events which demonstrated the non-benign aspects of the “civil atom”. Then most notorious is Chernobyl, which is examined here again by two French authors, J. Frot and A. Aurengo, an engineer and a physician.

A major manifestation of the physicist's interest in “science and society” is our recently renewed interest in the science education of the general public as well as that of our successor generations. J. Marque has some interesting – if disturbing – comments about the education of future scientists. L. Lerner and A. Melott add to our unease about the ‘science education’ received by many of our fellow citizens, though they do suggest some ameliorative approaches. A. Hobson reminds us that we cannot separate the fundamental science education of future scientists from that of the general public. Finally, though not included in this journal, our readers should be aware of recent efforts by our colleagues in the *Division of Particles and Fields* to introduce the lay public to the future of particle physics as well as to illustrate how forefront physics can lead to important practical applications in medicine and technology. They have produced a full-color-illustrated brochure called “Quarks Unbound” which will be distributed to all high-school physics teachers. It will also be available on the web at (http://www.aps.org/dpf/quarks_unbound.html).

It should be clear that issues of Physics and Society have important implications to present and future societal actions, both here and abroad, as well as providing clues for understanding past actions. I hope that our readers will share their thoughts on these subjects with their colleagues via submissions to this journal.

A.M.S.

LETTERS

A Reaction to a Reading of Jeff Schmidt's "Disciplined Minds"

The politics of professional work, which is the subject of Jeff Schmidt's book entitled "Disciplined Minds" belongs squarely in the agenda of the *Forum on Physics and Society*. In addition, much of Schmidt's discussion, and especially his pain, gives an eerie sense of *deja vu* to anybody who has read women's complaints about the professional world of physics.

Schmidt's basic thesis is that professionals work in the context of political agendas (...no debate from me on that...) and that professionals' training is designed to weed out those who do not possess the requisite compliance, obedience, submissiveness, etc, that will be demanded of them in their professional lives (...I have serious doubts about the validity of such an extrapolation...). He even makes the argument that political, as opposed to technical, criteria are primarily what determine the form of the certification barriers variously called qualifying exams, prelims, orals, etc.

I must admit that much of the anger and agony that saturates Schmidt's pages reminds me of the horrible feelings I sometimes had as a graduate student and post-doc. It is natural for people who are established in their professions to forget about what it was like to be in a very vulnerable and insecure position. To me, Schmidt's book read like it was from someone who never found a niche [although it might be more proper to say that Schmidt rejects the moral validity of most such available niches] and who feels the need to tell the world what hell goes on at the bottom of the food chain.

I have very little argument with Schmidt's viewpoint that professionals' activities are, in probably most cases, dictated by political forces. However, my interpretation of the significance of this is quite different from his. In particular, I don't think that professionals are, or even should be, somehow excused from or exempt from the omnipresent political nature of the life of *homo sapiens*. I believe that it is a naive, and ultimately false, assumption or hope that the work of science is supposed to be carried out primarily within a context of "Love of Truth and Beauty". Put bluntly: Why should any scientist think that he or she, by virtue of merely loving science, should be

consequently insulated from the nastier characteristics of existence of all other human beings, including competition, manipulation, domination, lying, betrayal, theft, intimidation, degradation...(I guess that's enough of a list for now...you get the idea...)?

Of course, one can reasonably ask, "Might it be possible to create a culture within science that is relatively free of such nastiness?" I think that the answer is probably "No" because science is just another tool of our species for survival. Insofar as tools resulting from scientific work lead to the accumulation of power, wealth, and other forms of "biological free energy", science is not exempt from, but rather is very much a part of, the processes of natural selection. Therefore, all the competition, manipulation, domination, struggle, etc, that is found in the world of science, whether it be in the life of a graduate student struggling to pass quals, or an assistant professor struggling to gain tenure, or an industrial scientist trying to avoid layoff, is a natural part of existence within the biosphere. Put simply: Scientists, too, are subject to the brutal forces of natural selection because scientists are living things. Schmidt's apparent belief that scientific activity should be motivated primarily by the love of ideas and/or a burning curiosity does not take this biological fact of scientists' existence into account.

One immediately practical aspect of these discussions concerns many women's complaints about males' behaviors in the professional physics world. Almost every time I read a narrative from a woman scientist about bad or insensitive treatment at the hands of a male scientist, I am reminded that I, too, was so mistreated (or at least felt uncomfortable) at some point in my working life as a scientist, or else I know of another man who was so (or much worse) mistreated. This is a *very* important consideration because probably no policy changes anywhere can eliminate the political nature of humans' relations with each other. As far as women's professional lives are concerned, although we might try to distinguish between brutalities and injustices that happen to anybody vs. those that happen to women specifically, I seriously doubt that making such distinctions is easy, or even possible in many cases. The sad truth is that sexual discrimination in science will be *passe* when women scientists, too, can compete, brutalize, manipulate, and dominate scientists with the same frequency and gusto as their male counterparts. (It will be like the Virginia Slims commercial used to say, "You've come a long way, baby...").

I realize that the viewpoint that I take above is not pretty, and even perhaps less pretty than that taken by Jeff Schmidt. However, I think it more accurately describes the possibilities (and realities) of professional life, and it hopefully is useful in the ongoing struggle to improve science by making participation in the professions of science more inclusive.

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